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Journal of the Society of Arts,

AND OF

THE INSTITUTIONS IN UNION.

No. 418.

FRIDAY, NOVEMBER 23, 1860.

Vol. IX.

Journal of the Society of Arts.

FRIDAY, NOVEMBER 23, 1860.

EXAMINATIONS, 1861. — NOTICE TO INSTITUTIONS AND LOCAL EDUCATIONAL BOARDS.

The attention of Secretaries of Institutions and Local Boards is specially called to Par. 5 of

the Programme of Examinations for 1861, as follows:—

5. A detailed list of the chairman, secretary, and other members of each Local Board, giving not only their names but their addresses and designations, should be submitted to the Council of the Society of Arts before the 1st of January, 1861. In some cases the Local Educational Boards comprise such large districts that for the convenience of the Candidates, Branch Local Boards have to be formed within the Districts. Wherever this is the case, the names and addresses of the members, both of the District Board and of its Branch Boards, must be forwarded to the Secretary of the Society of Arts. All changes in the composition of the various Boards now in existence, or to be formed hereafter, should be immediately notified to the Society of Arts.

INTERNATIONAL EXHIBITION OF 1862.

The following addition has been made to the List of Guarantors and of the sums guaranteed since the announcement in the *Journal* for November 2:—

* * * The name marked with an asterisk is that of a Member of the Society of Arts.

NAMES.	AMOUNT.	REPRESENTING THE OBJECTS OF THE SOCIETY—ARTS, MANUFACTURES, AND COMMERCE.
Amount last announced ...	£ 365,800	
*R. W. Winfield and Son, Cambridge-street Works, Birmingham ...	1,000	Manufactures.
Total ...	£366,800	
By ORDER, P. LE NEVE FOSTER, Secretary.		

FIRST ORDINARY MEETING.

WEDNESDAY, NOVEMBER 21, 1860.

The first Ordinary Meeting of the One Hundred-and-Seventh Session was held on Wednesday, the 21st inst., Sir Thomas Phillips, F.G.S., Chairman of Council, in the chair.

The following gentlemen were proposed for election as Members of the Society:—

Adams, John Hamilton, N.B.
Aldam, William, Frickley-hall, near Doncaster.
Alexander, Henry B. The Laurels, Barnes, S.W.
Artingstall, George..... Warrington.
Baldry, James Danford ... { 2, Queen's-square-pl., Westminster, S.W.
Barnet, George 2, Leinster-gds, Hyde-pk., W.
Bartholomew, C. Broxholme, Doncaster.
Begbie, Thos. Stirling..... 4, Mansion-house-place, E.C.
Beulton, Joseph 28, Bagnigge-wells-road, W.C.
Bradbury, James Huddersfield.
Bragg, John..... { 18, Vittoria-st., Regent-place, Birmingham, and 18, Thavies-inn, E.C.

Bramston, William..... 11, Waterloo-place, S.W.
Bridgewater, John 41, Wood-street, E.C.
Campbell, Colin Minton... { 9, Albion-place, Blackfriars, S. and Hatshill, Stoke-upon-Trent.
Campbell, Hugh..... 4, St. Paul's-grove, Canonbury, N.
Caplin, Madame Anne }
Roxcey 58, Berner's-street, W.
Chadwick, John 12A, Mosley-street, Manchester.
Charlton, Henry { 10, Great Charles-street, Birmingham.
Chawner, Richard Croft ... The Abnalls, Lichfield.
Churchward, J. G. Admiralty-house, Dover.
Clark, Cyrus Street, near Glastonbury.
Clarke, I. P. King-street, Mills, Leicester.
Clayton, Nathaniel Stamp End Works, Lincoln.
Clements, Robt. George.. 93, Church-st., Shoreditch, N.E.
Cosens, Fredk. Wm. 16, Water-lane, Tower-st., E.C.
Coulthurst, Wm. M. 59, Strand, W.C.
Cowie, Thos. S. 24, George-st., Hanover-sq., W.
Cremer, Wm. H., jun..... { 210, Regent-street, W., & 10, Bridge-st., Westminster, S.W.
Deacon, Solomon..... { 59, Alma-street, New North-road, Hoxton, N.
Docker, F. W..... 24, Denbigh-st., Pimlico, S.W.

Elkington, Alfred { 22, Regent-street, Waterloo-place, S.W.
 Emanuel, Harry 21, Hanover-square, W.
 Ernest, Henry 4, Whitehall, S.W.
 Fetherstone, John Wm. Church-street, Longford.
 Gaskell, John St. Nicholas-at-Wade, Margate.
 Grant, Alexander 2, Clement's-ct., Wood-st., E.C.
 Gruneisen, Chas. Lewis ... 16, Surrey-street, Strand, W.C.
 Hannington, C. S. North-street, Brighton
 Harrison, Thos. E., C.E. 27, Great George-street, S.W..
 Hartley, James Wear Glass Works, Sunderland
 Heather, James { The Crescent, Camden-road-villas, N.W.
 Heymann, Lewis Stoney-street, Nottingham.
 Holland, P. H. 36, Camden-square, N.W.
 Horn, James 14, High-st., Whitechapel, E.
 Isaacs, Saul 6, Thurlow-sq., Brompton, S.W.
 Johnston, Rev. Jno. Brown. Glasgow.
 Joyce, Rev. Jas. Gerald... Strathfieldsaye, Hants.
 Kelly, Sir Fitzroy, M.P. ... 32, Dover-street, W.
 Kimpton, Thomas 6, Bath-st., Newgate-st., E.C.
 King, John B. { 4, Gloucester-road, Kensington-gate, W.
 Kinns, Samuel, Ph.D. ... Highbury New-park, N.
 Landon, James { 88, Inverness-terrace, Bayswater, N.
 Lawson, Charles Edinburgh.
 Lea, Charles Broad-street, Worcester.
 Levinsohn, Lewis 7, Finsbury-square, E.C.
 Lightly, William 123, Fenchurch-street, E.C.
 Lockwood, Benjamin Huddersfield.
 Maclea, Charles G. 17, Blenheim-terrace, Leeds.
 Maw, George Benthall-hall, near Broseley.
 Middleton, Capt. Sir G. { Shrubland-park, Ipswich.
 N. Broke, Bart., C.B.
 Miles, W. P. Forest-hill, Kent, S.E.
 Munn, Major W. A. { Throwley-house, near Faversham.
 Napier, Hon. William ... { 2, Old Palace-yard, Westminster, S.W.
 O'Hagan, John 81, Lombard-street, E.C.
 Olding, John, C. E. Hull
 Payne, James { Canada-mills, Rotherhithe, S.E.
 Peake, Thomas { Brampton-lodge, near Stoke-upon-Trent; and the Tileries, Tunstall, Staffordshire.
 Potter, Edmund, F.R.S. ... Dinting-lodge, Glossop.
 Read, Reginald, M.D. { 1, Guildford-place, Russell-square, W.C.
 Reid, Hugo London
 Richardson, Thomas { 20, New Bridge-street, New-castle-on-Tyne.
 Rigby, George 7, Park-lane, Piccadilly, W.
 Robinson, James 7, Park-lane, Piccadilly, W.
 Rule, Rev. W. H., D.D. ... Aldershot.
 Rutley, John Lewis { 5, Great Newport-street, Long Acre, W.C.
 Rylands, John New High-street, Manchester.
 Sage, Frederick 11, Hatton-garden, E.C.
 Shaw, Charles Henry 55, Charing-cross, S.W.
 Sherriff, A. C. Shrubs-hill, Worcester.
 Shuttleworth, Joseph Stamp End Works, Lincoln.
 Simon, George 123, Fenchurch-street, E.C.
 Smith, George Henry ... { 16, Queen's-chambers, Manchester.
 Stanton, George Coton-hill, Shrewsbury.
 Stevens, William { Agnes-villa, Godolphin-road, New-rd, Hammersmith, W.
 Storm, W. Montgomery } New York, U.S.
 C.E.
 Sullivan, Rt. Hon. Lawrence Broom-house, Fulham, S.W.
 Telford, Charles Widmere, Bromley, Kent, S.E.
 Thomas, Edwin, C.E. { 20, Wharf-street, City-road Basin, E.C.

Thompson, Harry S., M.P. ... { Kirby-hall, York, and 17, Mansfield-street, W.
 Vickers, George Sheffield.
 Vieweg, A. J. 32, Wood-street, E.C.
 Virtue, James S. 294, City-road, E.C.
 Welch, John K. 51, Berners-st., Oxford-st., W.
 White, Bromley { 4, Princes-street, Bank, E.C., and 15, Percy-place, Clapham-road, S.
 Wilkinson, David { 2, Park-street, Higher Ardwick, Manchester.
 Willet, John, C. E., 35, Albyn-place, Aberdeen.
 Wood, John Thedden-grange, Alton, Hants.
 Woollams, Henry { 110, High-street, near Manchester-square, W.
 Wrigley, Francis { 16, Queen's-chambers, Manchester.
 Zanzi, Alexander 30, Brompton-crescent, S.W.

The Chairman delivered the following

ADDRESS.

It has been the pleasure of the Council to elect me their Chairman a second time, a distinction which I highly value; and it shall be my aim to repay their confidence, by endeavouring with assiduity and zeal to promote the objects of the Society.

Brief as is the period since our last Session, it has been marked by the death of many members of the Society, and names, once well known in this room, will be found in the obituary of the year.

The name of Joseph Locke must now be added to those of Stephenson and Brunel, whose loss we mourned at the opening of the last session; and we have thus been deprived, in the space of little more than twelve months, of the three men to whom is largely due the marvellous extension of locomotive railways in our own, and their introduction into other countries. The son of a colliery viewer, Locke was apprenticed at an early age to George Stephenson, and owed, for the most part to self-culture, that acquaintance with the principles of his art which enabled him to design and execute several of the principal lines of railway, as well in this country as on the continent of Europe, especially in France. I shall not attempt to define the exact position which Locke occupied in the scientific world, but no difference of opinion prevails with respect to his entire mastery of the practical details of his calling, or the energy, courage, and caution by which his character was distinguished, and which contributed to obtain for him the rare reputation of being an economical engineer. One who knew him well, when asked to indicate what he regarded as the salient features of his character as an engineer, writes of him thus:—"Locke was, I think, chiefly peculiar as an engineer, all through his career, for avoiding great works. He always endeavoured to achieve his object with the smallest means. Thus, instead of tunnelling Shap Fell, in joining Scotland and England together, he decided to go over, and trust to the greater development of power in the loco-

motive engine, which has been abundantly realized." The problem involved in the selection of gradients has changed very much since the early lines of railway were laid out, by reason of the increased power which has been given to the locomotive; but the engineer has few questions more difficult of solution than when he is required to set against each other the diminished cost of constructing, and the increased cost of working, a railway with unfavourable rather than favourable gradients. Locke's death may be termed sudden, for his illness was short, and he was taken from active life before age had weakened his intellect or bodily vigour.

The grave had scarcely closed over Locke, before his friend and associate in undertakings of national interest and importance, Mr. Matthew Uzielli, was stricken by a fatal illness, which terminated his life at the age of 55. Mr. Uzielli's mercantile operations were on a large scale; he was intimately associated with important financial undertakings, and had largely contributed to the extension of the railway system on the continent of Europe, acquiring in those pursuits wealth and influence. In this place his memory will be honoured for the liberal spirit in which he promoted science and art, and especially for the services rendered by him up to the close of his life, as a Vice-President and member of the Council of this Society; and his colleagues will cherish the recollection of the modest and unobtrusive manner in which his opinions were expressed and his counsel was offered. With the exception of His Royal Highness, the President, Mr. Uzielli was the only subscriber of £10,000 to the guarantee for the proposed International Exhibition of 1862, and his was the first name inserted in the guarantee list. It will not be without interest to mention that some years ago, when the Royal Geographical Society sought to induce the Government to fit out an expedition to explore the unknown portions of North Australia, Mr. Uzielli, who was a Fellow of that Society, offered to advance £10,000 for organising the expedition, and to trust to the Government of the day for the repayment of that large advance. Such acts denote a true nobility of character, and by them the proud title of merchant prince, in other days appropriated to Italian citizens, acquires a real significance in our own age and country.

Alfred Edward Chalon, R.A., who died recently, at the age of 80, claims a distinguished place among English artists. His water-colour drawings and miniatures, which are very numerous, possess a grace, and are characterised by a lightness of treatment, which no one has surpassed, and in addition to his mastery as a water-colour painter, he painted with much skill in oil, although in this class of art his works were not numerous. His feeling for colour was delicate

and refined; his forms were eminently graceful; and his powers of invention and composition were of a high order. For more than a quarter of a century his rooms were frequented by the rank and fashion of that world which loves fine clothes and rich jewels; and the high gifts and rare attainments of the artist were employed to exhibit the changing fashions of the passing hour; and hence, perhaps, it came to pass that the painter outlived his popularity, while possessing powers which might have won enduring fame. Artists who bow to the supremacy of a temporary fashion may profitably study the career of Reynolds, who, regardless of the capricious demands of his patrons, remained firm in his obedience to the true laws of Art: and his portraits, so far from becoming antiquated by age, derive an increased interest from recurring years.

The works of Alfred Chalon, united to those of his brother, the late Mr. John Chalon, R.A., formed an interesting exhibition in this place in the year 1855; and many now present will call to mind one of his last exhibited works, in this year's Exhibition, from the "Rape of the Lock," a bright and clever picture, and very remarkable as the work of a man nearly eighty years of age. Chalon was esteemed in private life for many amiable qualities, and it is understood that in the course of last year he offered his collection of water colour drawings to the inhabitants of Hampstead, on condition that they should be preserved in a suitable manner for public exhibition.

Sir William Ross R.A., was born at Tain, in Scotland, in 1794, and before his death had entered upon his sixty-sixth year. Encouraged by the advice and example of his uncle, then a member of the "Society of Arts," he early laboured to earn its rewards for artistic merit. The first successful effort was remarkable for a child of 12 years of age, an elaborate chalk copy from his Uncle Smith's engraving of the "Death of Wat Tyler," after Northcote's picture in the Guildhall of London; for this, in 1807, he received from this Society the Lesser Silver Palette. In 1808 he was awarded a Silver Medal for an original drawing of the "Judgment of Solomon;" in 1809, the Large Silver Palette for an original miniature of "Venus and Cupid;" in 1810, the Silver Medal and Twenty Guineas for an original drawing of "Caractacus before Cæsar;" in 1811, the Silver Medal and Twenty Guineas for an original drawing of "Samuel presented to Eli;" in 1816, the Gold Isis Medal for an original miniature of the late President of the Society, the Duke of Norfolk, painted solely by the aid of sketches and memoranda taken on one of the occasions on which the Duke presided. In the following year our Gold Medal was awarded to him for a large water-colour drawing of the "Judgment of Brutus." Admitted at the early age of ten to the Schools of the Royal Academy, his careful studies from

the antique and living models built up in him that accuracy of delineation which has been a distinguishing merit of his works. Two Silver Medals were awarded for his academical studies.

His reputation as a miniature painter, (an art which seems destined, as some think, to be superseded by photography) is attested by the variety and extent of his works, 3,000 in number.

Thomas Hoblyn, elected in 1815, was an active member of the Society, and served the office of Vice-President. When the Society was in an almost expiring state, some years since, he came down one evening and proposed twenty new members. He was mainly instrumental in introducing and promoting the employment of cocoanut oil, a sample of which had been sent to the Government from Ceylon. Mr. Hoblyn brought it before the notice of the Society, and the result of his efforts has been the establishment of a trade of great importance with India. Mr. Hoblyn was the inventor and introducer of many new articles of consumption, and a zealous promoter of science, but of late years he had ceased to take any active part in the Society's affairs.

Peter Wickens Fry, a solicitor, elected in 1845, was one of the earliest photographers in this country. He established the Photographic Club, the meetings of which were long held at his own house, and thus did much to promote the advancement of that art when it was but little known. He it was who brought into notice Archer, the inventor of the collodion process, now universally adopted at home and abroad, a process which has made photography what it is. The first picture taken by that process was exhibited by Mr. Fry, in the Society's rooms, in the year 1851. It was in a measure due to his exertions that the Art had so far advanced as to enable this Society to hold, in the winter of 1852-3, the first public Exhibition of Photographs. From that Exhibition arose the Photographic Society, in the formation of which Mr. Fry took a very active part. He was, at its formation, elected on its Council, of which he continued a member till he was compelled by illness to relinquish his seat not many months previous to his death.

Henry Riley Bradbury (son of Mr. W. Bradbury, of the firm of Bradbury and Evans), was a young man of great intelligence and activity. He introduced into England the Austrian invention of "Nature-Printing," a very remarkable process, which he worked out in this country. He also did much to improve the electrotype for purposes of block and surface-printing.

The Earl of Cawdor, Lord-Lieutenant of Carmarthenshire, a Trustee of the British Museum, D.C.L. and F.R.S., whose death has just occurred at the age of 70, possessed a mind which had been carefully cultivated, and was

characterised by a scrupulous accuracy. He was a liberal and judicious patron of the arts, especially of music, with the history and progress of which he was well acquainted, and he was a good judge of pictures. When a member of the House of Commons, he took an active interest in all measures of legislation affecting the Principality, and was influential in passing through the Legislature the Statute under which Wales was incorporated with the English Judicial Circuits, and justice has since been administered in that country by Judges of the Superior Courts at Westminster. He actively encouraged all measures designed for the improvement of his own neighbourhood, contributed liberally to the work of Church restoration, and promoted education with judicious liberality.

Dr. Buist, formerly the editor of the *Bombay Times*, but latterly Chief Superintendent of the Government Press at Allahabad, was an active correspondent of the Society, well versed in all that related to the Arts, Products, and Climate of India; and ready, at all times, to assist in promoting the objects of the Society, he contributed information to our *Journal* as well as papers for reading at the evening meetings. As a practical philanthropist Dr. Buist will long be remembered in Bombay; he was forward in every enterprise for educating the people, ameliorating their condition, and rescuing the guilty from persistence in crime. He was the life of the scientific and literary societies of the place, and may almost be said to have created the science of meteorology in India.

The Rev. Baden Powell, F.R.S., and Savilian Professor of Geometry at Oxford, although not a member of the Society, had acted as a member of the Board of Examiners. His general knowledge was extensive; his understanding was vigorous; his mind had been disciplined by laborious study; his habits were characterised by unwearied industry; and his eminence in physical and mathematical science is indicated by the distinguished position which he attained early, and enjoyed long, at the University of Oxford. His contributions to science were numerous and important, and he contributed largely to the reforms which have taken place at both our Universities.

Theodore Edward Cantor, M.D., of her Majesty's Indian Medical Service, is mentioned on account of the disposition of his property by a will made on the 3rd of March, 1859, whereby he appointed the Administrator-General of Fort William to be his executor, and bequeathed his property, which we are informed exceeds in value £9,000, in equal shares to the Wellington College and the Society of Arts; and declared it to be his desire that the monies so given should be applied by the Governors of the College and by the President of the Society in such manner as they shall deem most conducive to promote the

objects of the College and Society. Apart from the substantial advantage to the Society of so considerable a bequest from one who does not appear ever to have been a member, it is very gratifying to the Council to be assured that even in distant lands the proceedings of the Society awaken the interest and enlist the sympathies of their countrymen.

The International Exhibition of Works of Art and Industry, to be holden in 1862, has largely engaged the attention of the members of the Council, and occupied much of their time during and since the close of the last session.

In order that the Council should succeed in obtaining subscriptions to the guarantee fund, it was necessary to define the general conditions on which it should be contributed, and especially to name the trustees to whom the management of the undertaking should be entrusted. The Council recommended for the office of trustees, Earl Granville, K.G., Lord President of the Council; the Marquis of Chandos; Thomas Baring, Esq., M.P.; C. Wentworth Dilke, Esq.; and Thomas Fairbairn, Esq.; and this selection has received the entire approval of the many influential persons who have signified their willingness to join in the guarantee agreement. The provisions of that agreement received careful consideration from the Council, and it was resolved that no subscriber should be liable until £250,000 at least was guaranteed; that application for a site at South Kensington should be made to the Commissioners for the Exhibition of 1851; that one-third part at least of the sum expended on buildings should be employed in erections of a permanent character, to be held by the Society for decennial or other periodical Exhibitions, and when not so used, for other purposes tending to the encouragement of Arts, Manufactures, and Commerce; and that the disposal of any surplus funds should be reserved to the guarantors for the promotion of the same objects. Active measures were taken by the Council to make their arrangements known to the members of the Society as well as to other influential persons connected with Arts, Manufactures, and Commerce; and the views of the Council of the importance of periodical Exhibitions, and the value attached to them by the public as a means whereby the growth of art and industry may be stimulated, and their progress ascertained and recorded, received remarkable confirmation from the prompt and liberal spirit in which the guarantee fund was subscribed by large numbers directly interested in the operations of art and industry. Although no public appeal by advertisement has been issued, and no public meeting held, the guarantee fund now amounts to £366,800, subscribed by 662 persons.

On the 5th March, 1860, the Council transmitted to the Commissioners for the Exhibition of 1861 a copy of the guarantee agreement,

inviting their collective and individual support for the undertaking, and asking for the grant of a portion of the ground at South Kensington, for the purpose of holding Exhibitions, and on the 8th June, 1860, renewed their application, and urged on the Commissioners the propriety of permanently appropriating a portion of their estate for promoting Exhibitions of art and industry. On the 30th June, 1860, the Council were informed by the Commissioners that they are willing to appropriate a portion of their estate at South Kensington for the International Exhibition of 1862 rent free; to vest in the Society of Arts, at a moderate rent, the site of the permanent buildings proposed to be erected on a part of the ground, provided the sum of £50,000 be expended in their erection; and to reserve the remainder of the ground for an International Exhibition in 1872, provided £10,000 be paid to the Commissioners out of the proceeds of the Exhibition of 1862.

Various questions have been raised in the correspondence of the Council with the Trustees, but these, I am happy to say, have now received a satisfactory solution. At the suggestion of the Trustees, a letter was addressed by the Council to the Commissioners for the Exhibition of 1851, to which a favourable reply has been given, and as the Commissioners have signified their willingness to afford such support and assistance to the undertaking as is consistent with their position as a Chartered body, and with the powers conferred upon them by their Charter of Incorporation, the Council confidently expect that the Trustees will enter on their duties without delay.

His Royal Highness the Prince Consort, whose desire it has always been to assist every well-considered plan for the advancement of Art and Science in their application to industrial pursuits, has manifested his approval of the intended Exhibition, as well by subscribing £10,000 to the Guarantee Fund as by affording to the Council valuable advice and judicious recommendations for the removal of difficulties and the successful prosecution of the undertaking: and the Council esteem very highly this recognition by His Royal Highness of the important benefits which the intended Exhibition may be expected to confer on the industry of our own and other countries.

The Council have seen no reason to relinquish the conclusion to which they came—that an International Exhibition in 1862 would elicit even more valuable results than were achieved in 1851—if managed with the same spirit and intelligence as its great predecessor. The great expansion of our commerce, as evidenced by the increase in our exports and imports; the former from 71 millions, in 1850, to 130 millions in 1859, and 101 millions in the first nine months of 1860—the numerous inventions and improvements in our manufactures—the large increase in

population and wealth—the extension of the means of locomotion by the multiplication of railways at home and abroad, and the desire for travel thus engendered—the more intimate knowledge of this country by foreigners—the spread of education—the growth of liberal commercial principles—an increased knowledge of and love for Art, will each and all contribute to swell the numbers who will seek admission to the Exhibition; whilst the manifestation of the marvellous progress of the last ten years in the staple productions of this and other countries will afford the most powerful stimulus to future improvement. The Society may be congratulated on the eminent success which has attended the efforts of the Council to provide an adequate Guarantee Fund. When their intention to promote the holding an International Exhibition in 1862 was first made known to the public, their resolution was regarded by many with apprehension and distrust, but the favourable opinion of the undertaking which was early manifested by men eminent in various walks of active life, afforded satisfactory proof that the Council had interpreted aright the feelings of their countrymen. The same motives which animated manufacturers and inventors in 1851 will exist in full force in 1862. Men hitherto but little known will provoke rivalry and challenge competition, whilst men better known and established will not be left behind in the struggle for distinction.

The Council therefore not only confidently expect to witness a successful Exhibition in 1862, but by the success of that undertaking to ensure the establishment under Royal sanction of Periodical International Exhibitions of Works of Art and Industry. The foundation of such Exhibitions as a permanent institution will form an appropriate distinction of the country in which an international Exhibition was first conducted with entire success.

The Council has published and widely circulated its programme of Examinations for 1861, wherein will be found ample details for the guidance as well of Local Educational Boards as of Students desirous that their efforts for self-improvement should be tested by the Society's Examiners.

The last Annual Conference with the representatives from Institutions in Union resolved that further provision for examination in drawing is required by the Institutions, and that it would be desirable, wherever practicable, to institute examinations for women in the most important branches of domestic economy. The Council, having taken those resolutions into their consideration, have included Freehand and Mechanical Drawing and Domestic Economy in the subjects of examination for 1861: and they have added to those subjects Mining and Metallurgy.

The results of the examinations for the pre-

sent year were laid before the Ninth Annual Conference of the representatives from the Institutions in Union and the Local Educational Boards, with the Council, held in the month of June, and will be found in the report to the Council from the Secretary, published in the Society's *Journal*.

It thus appears that the previous Examination of 700 candidates was conducted by 63 Local Boards; that 586 candidates underwent the final examination, of whom 478 obtained certificates, and that 821 papers were worked; that 110 certificates of the first, 234 of the second, and 312 of the third-class were awarded, and that for 165 papers, or 20 per cent. only of the whole number worked, no certificate was given; that 16 first prizes of £5 each, and 14 second prizes of £3 each were gained, and that in 8 subjects of Examination no prize was awarded; that 12 prizes of £5 each were awarded to Institutions whose candidates obtained first prizes in some of the 25 subjects of Examination; and that four prizes of £10, £8, £6, and £4 were awarded to Local Boards. Of the 586 candidates who underwent the final examination, 437 were examined in England and Wales, 136 in Scotland, and 13 in Ireland; and of the Scotch candidates there were examined at Glasgow 110 persons, who worked 138 papers, and 122 certificates were gained by 97 persons, the number of failures at that place being 13. In addition to the Certificates six prizes of £5 each, and one prize of £3 were awarded to Glasgow candidates, six prizes of £5 each to the Institutions at which the prize candidates received systematic instruction, and £18 to two of the Local Boards of that place.

It is deserving of notice that whilst Glasgow supplied 110 candidates, and Leeds 62, the whole of the Metropolitan Institutions supplied no more than 48.

There has been distributed this year in prizes £210 (being an increase of £31 over the sum awarded last year), and of the sum this year awarded £81 has been gained at Glasgow. No papers were worked on the subject of Agriculture, and only two in Navigation, whilst the departments in which no prize was awarded included the Principles of Mechanics, Practical Mechanics, Navigation, Mensuration, and Trigonometry, all of them important in some industrial calling.

Having, in a former address, expressed my own sense of the importance to the mechanic and artisan of an intelligent acquaintance with his own language, not only as a very valuable discipline of the intellect, but as the only sufficient preparation for the employment of reading as a recreation for his leisure, it is satisfactory to observe a substantial increase in the papers worked in English History and Literature, the number this year being 82, and last year 68. The reports of the Ex-

aminers in these subjects indicate not only a greater number of papers, but also papers of a superior character to those of preceding years; but students should give good heed to the remarks of the Examiners printed in the *Journal*, and remember that, to manifest an accurate grasp of one subject is more valuable in an examination than to return crude and imperfect answers to many questions.

Whether I contemplate the number of candidates who presented themselves for examination, and especially in the class of artisans or mechanics, the number and character of papers worked in some important subjects of examination, or the number of places or centres at which Local Boards have been established and Examinations conducted, the results seem as yet scarcely commensurate with the importance of the undertaking. Four years have elapsed since the Society instituted Examinations for certificates and prizes in various departments of science, language, and literature, and this is the third year in which Examinations have taken place by means of Local Boards. The number of such Boards was forty in 1858; fifty-four in 1859; and sixty-three in 1860. The number of students at the final examination was, in 1858, 238, by whom 516 papers were worked, and to whom 361 certificates were awarded; in 1859, 480, by whom 766 papers were worked, and to whom 540 certificates were awarded; in 1860, 536, by whom 821 papers were worked, and to whom 656 certificates were awarded. Those figures indicate a gradual and steady advance in the numbers of the candidates, whilst the reports of the examiners disclose an improvement in the character of the papers worked in some departments of the examination. It must, however, be remembered that the Council has for several years been employed in encouraging the efforts for self-improvement of the adult student, in stimulating the zeal of the friends of elementary education, and in diffusing amongst all classes a due estimate of the importance of the object for which the Society has heartily laboured. The means it employs is examination, but the end sought is the intelligent education of the people who are engaged in manual labour, or, in other words, the extension of our Arts, Manufactures, and Commerce, by refining the taste and advancing the skill of our workmen. That is truly a design specially appropriate to the constitution of this Society, and one on which every recurring year confers increased importance. A large and increasing portion of the population of these islands lives by Arts, Manufactures, and Commerce, and is dependent on the skill and intelligence with which science in its various forms is applied to the arts of production. The vast amount of our manufactures which is

exported to other countries competes there, not alone with the domestic produce of those countries—guarded, it may be, by jealous tariffs—but also with the fabrics there imported, whilst at home our productions enjoy no artificial protection, and can only maintain their superiority by the increased skill and advanced intelligence of the native workman. It is, when contrasting the great necessities of our times and country with the narrow limits of the work we have accomplished, that I speak with humility of the results we have achieved.

The composition and organisation of Local Educational Boards are subjects which the Council has regarded with solicitude; impressed, as they are, with the important influence which such Boards may exercise when judiciously constituted, and especially when they comprise a full representation of the educational agencies, municipal authorities, and active intelligence of their respective neighbourhoods.

Whether one locality should contain more than one Board, or whether several Boards in the same locality should be merged into one, and whether Boards for conducting the Examinations in connexion with the Society should also superintend the Middle Class Examinations, are questions which can only be duly determined by regarding the special circumstances of the particular districts. The unnecessary multiplication of Boards is doubtless an inconvenience, and may be sometimes hurtful, but the union of Boards would be a misfortune if, by undertaking the University Examinations, as well as those of the Society, suspicion should be raised in the artisan that the objects and interests of his class were overlooked or postponed to those of a class above him in the social scale.

By the agency of Institutions in Union with the Society, now 300 in number, the adult learner is supplied with books and teachers, or is encouraged and aided in the arduous task of self-culture, and obtains that guidance without which the aims and endeavours of the self-taught student so often fall short of the success they deserve. On the efficiency with which those Institutions are conducted, on the extent to which—and the efficiency with which—systematic instruction in classes is there supplied, on the self-denying spirit of the teachers, and the industry and perseverance and resolution of the students, will depend, in a large measure, the formation of those habits of thought, and the acquisition of that information, which it is the aim and design of our Examinations to elicit, make known, and reward.

It has been often confessed that those Institutions have disappointed the sanguine expectations of their early founders, and many suggestions have been offered for increasing their efficiency as agencies for adult teaching, and at the last Conference of the Representatives with the

Council, a resolution was unanimously passed, that wherever large district Educational Boards, or Local Unions of Institutions can be established, it is desirable that organising masters should be appointed to promote the establishment of adult classes, and to assist in the work of teaching. The experiment of appointing such a master has been successfully tried in East Lancashire, where a Union of Institutions and night schools was formed by the exertions of Sir James Kay Shuttleworth, and an officer of the same class has been since appointed for a Union of Institutions in South Staffordshire. In the report of your Secretary, read at the last Conference, it was intimated, as a conclusion formed by him from the tone and character of their correspondence, that the Institutions in Union are gradually becoming more educational, and in the same proportion have become entitled to, and are receiving, an increased amount of sympathy and support.

The representatives of Institutions in Union at their last Conference with the Council, resolved that it would, in their opinion, conduce to the advantage of large classes of the people if the National Museums and Public Galleries were open of an evening. The Council have already manifested their desire to promote the admission of working men to national museums and galleries after the close of their day's labour, and they retain the conviction that, by multiplying the opportunities for cultivating the intelligence, and elevating the pursuits of the people, we may look for the correction of evil habits, the diffusion of good manners, the formation of right principles, and an increased reverence for salutary authority.

The establishment of museums which should exhibit the botanical, mineral, and other natural productions, and illustrate the antiquities and industrial operations of their respective neighbourhoods, was recommended to the Institutions in Union by the representatives of those bodies at the last Conference; and the Council would welcome the efforts of the Institutions to establish such museums, in the conviction that they would promote habits of accurate observation on subjects connected with natural history, afford important aid to the intelligent study of natural science, preserve interesting remains of past ages, exhibit suitable specimens of the industry of our own, and render the Institutions objects of additional interest in their several neighbourhoods.

The formation of libraries accessible to working-men, either free or on the payment of moderate contributions, is an object which the Council would gladly promote; and they desire to express to their former colleague, Mr. William Brown, who has conferred so many benefits on the town in which his active life has been passed, their admiration of the munificence and public spirit which he has manifested, in erecting,

at his own cost, a noble building, to be for ever dedicated as a museum and free library for the use of the inhabitants of Liverpool.

The Council learns with satisfaction that efforts are making to establish museums at the North, South, and East ends of London, and they hope to witness the formation of a free library in the City.

Mr. Twining has now provided a temporary building at Twickenham for the reception of his Economic Museum, which has been re-arranged, and may be viewed with tickets, which can be obtained of the Society's Secretary.

The Committee appointed to consider and report upon the Musical Pitch which it would be desirable to adopt as the standard for this country made a report which was approved of at a meeting, attended by many eminent musicians, in the month of June last, who agreed to recommend for general adoption a pitch of 528 vibrations for C. This number of vibrations marks an intermediate tone between the high opera pitch at present in use, and that recommended as a basis in mathematical treatises, and differs so slightly from that which has been fixed as the *diapason normal* in France, as to occasion no practical inconvenience, whilst it is the pitch which was adopted by the Stuttgart Congress in 1834. There is not, however, in this country any authority, as in France, for enforcing the employment of a standard pitch, and the recommendation of the Committee must rely on its own intrinsic merits for adoption. The Council, with the view of securing a general concurrence in the recommendation of the Committee, have obtained the assent of composers, performers, musical instrument makers, and patrons of music, to a declaration that they will adopt the pitch which has been selected, and promote its general employment. They have also caused a standard tuning-fork to be prepared, verified copies of which may now be obtained, and they confidently anticipate the acceptance of this pitch by the musical profession, and its ultimate adoption generally in this country.

In the session of 1857-8 a Committee was appointed by the Council to inquire into the subject of copyright in works of the Fine Arts. That Committee appointed Sir Charles Eastlake (President of the Royal Academy) their Chairman; and having held several meetings, which were numerous attended, and received answers from very many artists to whom inquiries were sent by the Committee, affording ample evidence of the wrongful and fraudulent acts extensively committed with impunity, to the injury of artists and purchasers of works of Art, reported that the existing laws of British Artistic Copyright are exceedingly defective and unjust, because they afford the producers of works of Art no sufficient protection against the piracy of their productions, and the purchasers no redress for any

invasion of their property. That by reason of this defective state of the law,—direct encouragement is given to an extensive manufacture of spurious works of Art which are sold as originals,—to the serious injury of artists, the pecuniary loss of purchasers, and the demoralization of young or needy artists employed in the preparation of such works; and injustice is inflicted upon the subjects of those foreign States who have entered into International Copyright Conventions with her Majesty, and whose works are not protected from piracy in British territories, whilst protection is afforded in such foreign States to the works of British artists.

The report of the Committee, which was framed with much care, and is characterised by much ability, and to which was appended a report from Mr. Robertson Blaine to the Committee, on the existing common and statute law relating to Artistic Copyright, will be found in the *Society's Journal* for March 26, 1859.

A Bill to establish Artistic Copyright was prepared under the direction of the Committee, and received the sanction of the Council, and by the advice of the Right Hon. S. H. Walpole, who had, at the request of the Committee, considered the provisions of the Bill, a deputation consisting of Members of Parliament, Artists, and Members of Council, waited on Lord Palmerston, on the 28th April last, when the measure was explained to his Lordship by Sir Chas. Eastlake and Mr. Field; and the Chairman of the Council informed the noble Lord that the Council, in conjunction with a Committee, represented by the deputation, had considered the subject of Artistic Copyright very carefully in all its bearings, and had drawn up the Bill to which they asked his Lordship's attention. The Bill had been carefully prepared, had been revised by Mr. Rolt, the eminent Chancery Barrister, had met with the general approval of Mr. Walpole and Sir Hugh Cairns, and had been considered by Mr. Coulson, Q.C. The deputation were desirous that the provisions of the Bill should be thoroughly investigated, and they ventured to urge upon the Government (if the principle of the measure met their approbation) to assist the Council in getting it so advanced in the House of Commons that it might be fully considered during the Session, which could only be done by their aid.

The basis adopted in framing the Bill is to secure for the artist during his life, and for a definite period after his death, a copyright in such works of fine art as he shall have designed and executed, whether pictures, sculptures, architectural designs, engravings, or photographs; to enable the artist to transfer such copyright with the original work to a purchaser, or to reserve such copyright, notwithstanding the sale of the original work: and to afford protection from the frauds practised on the public by the manu-

facture and sale of spurious copies, pretending to be original paintings, whether of the old masters or others.

Lord Palmerston promised to consider the Bill carefully and consult with his colleagues on the subject, remarking that if a man expressed an idea in black marks with a pen and ink upon paper, the law gave him a copyright, but if he expressed the same idea in colours upon canvass he had no copyright.

The state of public business seems to have prevented the noble Lord from giving any especial attention to the subject during the last session, but the Council have printed and circulated amongst members of the legislature and other persons of influence, a memorandum, embodying the provisions of the Bill, with reasons in its favour; and it will be their endeavour to introduce, and, as they hope, to pass through the legislature in the coming session, an Act to establish Artistic Copyright on a satisfactory basis.

In any survey of the arts and industry of this country, our mineral riches may justly occupy a prominent place. The abundance of our coal-fields, and the economy with which they can be worked, the extent of our iron-mines, and the gigantic character of the establishments at which the ore is smelted and the metal manufactured—our mines of tin, and copper, and lead—the clays from which our earthenware and porcelain are composed—the materials of which our buildings are constructed, must, in the aggregate, be regarded as sources of national wealth second only in importance to the fruits of the earth. The produce of our mines is not only adequate to the abundant and economical supply of our wants at home, but, with the exception of textile fabrics, it constitutes the most important department of our export trade, as will be seen from the following details, taken from the Board of Trade returns for the year 1857, being the largest amount exported in any year:—

Brass and copper manufactures	£3,124,049
Coals, coke, and culm	3,210,661
Earthenware and porcelain	1,492,236
Hardware and cutlery	4,016,230
Iron and steel	13,603,337
Machinery	3,883,669
Tin-plates, and tin and pewter ware	1,533,055

£30,863,237

It is not alone the extent and variety of our mining operations or the gigantic scale of the establishments at which the ores are smelted and the metals refined and applied to their various uses, nor even the amount of capital embarked and labour employed in those undertakings, which have rendered the progress of mining and metallurgy an object of special interest to a Society which regards the application of science to the arts of production and the operations of industry as its own peculiar province.

In the operations of mining and metallurgy

the skill and experience of the intelligent artisan and mechanic have been largely guided by the researches of science; and I might instance many papers of great value read before this Society which have contributed to the formation of accurate opinions on questions of much interest in practical metallurgy. An acquaintance with mineralogy, chemistry, and mechanics is necessary for the successful practice of metallurgy, and at our mines and smelting furnaces will be found men conversant with the practical application of each of those important branches of science. The influence of this union of science with practice has been most remarkable in the making of iron and in the growth and present condition of that trade. It is well known that Surrey, Kent, and Sussex were long the chief seats of our iron manufactures, but in the reign of Elizabeth the erection of new works was prohibited in those counties by legislation, "in order that the great plenty of timber which had formerly grown there, but was then greatly decayed and spoiled, might not be utterly consumed and wasted." When John Evelyn, 50 years after the death of Elizabeth, delivered before the Royal Society a discourse on forest trees, afterwards printed under the name of *Sylva*, he lamented that nature had thought fit to produce this wasting ore of iron, more plentifully in wood lands than elsewhere, and thus enrich forests to their own destruction.

In the year 1619, Dudley Dudley, then a youth of 20 years old, was fetched home from Baliol College, Oxford, to manage three iron works of his father's, in Worcestershire; but wood and charcoal growing very scanty, and pit coals abounding, he was induced to alter his furnaces and attempt the making of iron with pit coal, in which he obtained such success, that at two trials he found the quality to be good and profitable, and a patent for the invention was granted by King James I., in the nineteenth year of his reign, for the term of thirty-one years. Rival manufacturers sought to deprive Dudley of the benefit of the invention, by maintaining that the patent amounted to a monopoly, but through the influence of Edward Lord Dudley, a clause was inserted in the statute against monopolies, passed in the twenty-first year of that King, saving to Lord Dudley, for 14 years, the benefits of the patent for smelting and refining iron, and all mines and metals, by means of pit-coal, sea-coal, peat and turf.

To those who regard with sympathy and reverence the struggles of ingenious and energetic men to overcome the hindrances by which inventive genius is so often obstructed, the "*Metallum Martis*" of Dudley Dudley, published in 1665, and dedicated to King Charles II., will well reward the trouble of a careful perusal. The overthrow of his works by a great flood; the

opposition of rivals who disparaged his inventions because, as he averred, he sold good iron cheaper than they could afford it; harassing attempts to induce the legislature to annul the patent as a monopoly; the destruction of his works by riotous persons; his own imprisonment on occasion of law-suits and losses; rival patentees, who wrongfully laid claim to Dudley's invention; the seizure and sale of his estate during the civil wars for his loyalty to the King; the refusal of the Privy Council to renew the patent after the Restoration—these successive misfortunes compelled Dudley to desist from the prosecution of his inventions, although he asserted that he had accomplished an eminent triplicity in making iron—first, more sufficient; secondly, more cheap; thirdly, more excellent.

Experiments in the use of pit coal were resumed at Coalbrookdale in the early part of the last century, but the chief portion of our iron was smelted and manufactured by means of charcoal to within a century of this time. Yet, it is probable that we now consume 15 millions of tons of coal in the various operations connected with the manufacture of iron.

Two centuries ago Dudley Dudley wrote that Scotland and Wales had their supply of iron from England's granary, yet did they abound with coal, iron, stone, and mines of all sorts, and might not only supply themselves, but also his Majesty's other territories with iron, iron-wares, and steel, and thereby be helpful, not only to themselves, but to England also, and all plantations of his Majesty on this side and beyond the line.

More than a century elapsed after Dudley wrote before the Welsh Iron Trade acquired prominence, and it is not until our own-day that the Scotch Iron Trade has grown into importance.

Up to so late a period as 1786 we were largely dependent on importation for a supply of that metal. Bar iron then sold in the home market at £18 a ton, whilst a duty of £6 10s. was imposed on imported iron until 1820. Yet, so marvellous has been the growth of our manufacture of iron that, in 1857, we exported more than 1,500,000 tons, of the value, including hardware and machinery, of £21,503,236, a large portion of which was taken by iron-producing countries.

In an iron age, when our roads, ships, and buildings, are constructed so largely of iron, it cannot be inappropriate to remind the members of this Society of the rapidity which has characterised the modern growth of this important branch of our national interests, or to present to them the confirmation thereby afforded to the truth that it is natural in Arts to be in perpetual agitation and growth. I have not alluded to questions which have been considered in this room, and elsewhere, connected with the produc-

tion of steel, whether cast, or puddled, or wrought, important as those are with relation to the employment of that material in the casing of ships, or the construction of cannon, but to all who are engaged in efforts for improving our manufactures, in iron or steel, we may bid God speed, satisfied of the benefits which must result from labours in which this country has so mighty an interest.

Whilst the mineral resources of our own country enable us to produce, in great perfection, the machinery by which so large a portion of our manufacturing industry is conducted, and to provide with much economy the fuel by which that machinery is kept at work, we are dependent on our own colonies and on foreign countries for the raw materials of the greater part of our textile fabrics. Thus, our chief imports of raw cotton are from the United States. We obtain raw silk from China, India, Italy, and France; flax from Russia, and other European countries; whilst we import wool from Australia, India, the Cape, Continental Europe, and South America. The enormous extension of our cotton manufactures, and the consequent increase in the importation of raw cotton, from 150 millions of pounds in 1820, to 1,225 millions in 1859, and the large proportion of that supply which we derive from the United States, and which, in the last year, amounted to four-fifths of the whole, have naturally led our manufacturers to desire that other sources of supply of cotton should be made available for our wants. It is impossible to exaggerate the importance of this question. Millions of hands are now engaged in or dependent on our cotton manufactures, and to them a stoppage in the supply of raw cotton would be equivalent to a food famine. The same effects, although in a less degree, would be caused by a stoppage of our supplies of wool, silk, flax, or hemp, and hence the importance of rendering our supply of the raw materials of our textile fabrics less dependent on the industrial arrangements or foreign policy of particular countries than is at present the case.

In seeking such a supply, our attention is at once directed to our own colonies and dependencies, situated in every quarter of the globe, placed under almost every parallel of latitude, characterised by great diversity of climate, producing all the raw materials required for our manufactures, and offering markets for the produce of our looms and mines, and whatever else may be contributed by our arts and industry.

The Council, some years ago, through the agency of the Colonial office, made known to the Governors of our several colonies, the desire of the Society to give publicity to their resources, as well as their wants, and thus increase the demand for their productions; and they suggested, as the best means for effecting those

objects, that some person or society, in each colony, qualified for the task, should frame a statement of the matters on which information would be valuable, in the form of a paper, to be read before the Society, and should suggest such further proceedings as may be most suitable to the circumstances of the colony. Amongst the Institutions in Union with the Society are several established in our Colonies, and it has been the anxious desire of the Council, by their agency as well as by the good offices of influential and intelligent persons, resident in or connected with the Colonies, to acquire and diffuse accurate information with respect to the wants, resources, arts, and products, of those important territories which own the sway of Queen Victoria, and to make known to the surplus population of an old country, where and how they may become the prosperous founders of orderly, intelligent, and industrious communities by whom the arts, the language, the domestic habits, as well as the faith and worship of their fatherland shall be preserved and extended. Although it has not as yet been found practicable to enlist much Colonial sympathy in the plans of the Council, they have succeeded in directing attention to Colonial subjects by means of Reports of much interest on Australia and New Zealand, and of papers of a valuable character, read at the weekly meetings of the Society, amongst which special mention may be made of a paper "On British Honduras; its History, Trade, and Natural Resources," read by the Hon. R. Temple, Chief Justice of that Colony, in the session of 1856-7; a paper "On Canada; its Productions and Resources," read by Professor John Wilson, F.R.S.E., in the session 1857-8, which contains valuable information on the history, physical formation, climate, productions, and social condition of that great province; a paper read in the session of 1858-9, by Mr. Hawes, a Member of Council, "On the Cape Colony," which he had personally visited, and with the affairs of which he is very conversant. In that paper an interesting account was given of the government, institutions, and laws of the colony, its religious and educational establishments; its climate, productions, and trade; its aboriginal inhabitants, and the advantages it offers to emigrants. Two papers were read by Dr. Forbes Watson, one in the session of 1858-9, "On the Growth of Cotton in India," and one in the last session "On the Chief Fibre-Yielding Plants of India," to each of which the Society's Silver Medal was awarded, and the last of which was rendered of special value by the large amount of information it contains, and by the numerous illustrations which were furnished at the expense of the Indian Government; a paper "On New Zealand and its Resources," was read by Mr. Wm. Stones, in the session 1857-8, which contained an interesting account of the climate, physical

geography, animal, vegetable, and mineral productions, political divisions, and settlement of those islands; and two papers were read by Mr. Leonard Wray, one in the Session of 1858-9, "On the Culture and Preparation of Cotton in the United States of America;" and one in the last Session, "On the Means of Increasing the Production of Sheep's Wool and of Angora Goat's Hair," to both of which the Society's Silver Medal was awarded. It is very satisfactory to the Council to find that Dr. Watson's paper on "Indian Fibres" translated into Dutch by Professor Bleekrode, one of the Society's most active corresponding members, has been published at Rotterdam; and the paper, as originally read, will be re-published in London by Messrs. Bell and Daldy.

In my last address I instanced the large importation of cotton from British India in 1857, amounting to 250 millions of pounds, or one-fourth of our entire supply for that year, not as presenting an accurate scale of the quantity actually obtained by us from that country on an average of years, but as some indication of the cotton-growing capabilities of India, and of the rapid increase which had taken place in the export of raw cotton from that country since the year 1848, when our imports from India were 84 millions of pounds, or one-ninth of our entire supply.

The tables supplied by Dr. Forbes Watson, showing the quantities and value of cotton exported from India from 1850-1 to 1857-8 inclusive, prove that my estimate of the ability of India to supply cotton in past years for one-fourth part of the consumption of this country was not exaggerated; inasmuch as it thence appears that on an average of those years, 240 millions pounds of cotton were exported in each year from India, whilst the entire imports into the United Kingdom in the same period averaged 923 millions pounds yearly; and it may be noticed that our imports of cotton, on an average of 20 years ending with 1839, did not exceed 270 millions of pounds yearly, or less than the exports of cotton from India in the year 1857.

May I not now repeat the anticipation which was then expressed, that when increased intelligence and capital shall be directed to the cultivation of the cotton plant in India, and the improved communications now in progress in that country shall be completed, our own dependency will provide us in far larger measure than at present, with a raw material of such vast importance to our manufacturing prosperity, and to the well-being of our population, thus cheapening a raw material heretofore almost exclusively supplied to Europe by the United States, and which in that country is the product of slave labour.

It is important to observe that whilst the demand for raw cotton increased from 151 millions of pounds in 1820, to 1,225 millions in 1859, the

price was reduced in the same period from 11½d. to 6¼d. a pound, and the importance of that alteration will be seen when the aggregate amount of the reduction in one year is found to be 25 millions sterling.

The valuable details contained in the papers I have enumerated are unsuited to the present occasion, and I must refer those members who take an interest in the subjects to which they relate to those numbers of the *Journal* in which they are found, but in order to show the magnitude of the raw materials imported for our textile fabrics, I may state their computed value for the year 1859:—

Cotton	£34,559,636
Wool	9,831,007
Silk	10,596,676
Flax, hemp, and jute	6,120,989
	£61,108,308

The English wool consumed in our manufactures is estimated by Mr. Wray (on what authority I know not) at 275 millions of pounds weight, the value of which may be taken at eighteen millions of pounds sterling. Of the native flax I have no estimate. The exports of our textile fabrics, according to the declared real value, amounted in the year 1859 to £78,466,248.

How strikingly is the inter-dependence of communities exemplified by the conveyance from India to England of the raw cotton grown by the ryot of Bengal, to be exchanged for the printed calico into which the same cotton is woven by the looms of Manchester, in order to be converted into garments for the peasant by whom the raw material was raised. In like manner the shepherd of Australia or the Cape is clothed in garments made from cloths woven in Yorkshire, from wools produced in those colonies, and conveyed thousands of miles from the pastures on which the sheep were fed to supply the looms of Leeds, and to be again returned as cloth to the colony in which the raw material was produced.

The formation during the present year at Manchester of a Company for promoting the growth of cotton in India, must exercise an important influence on the supply of that material if the operations of the Company are characterised by the active energy which distinguishes the leading men of that manufacturing capital.

Time will be necessary in order to form connexions with the cotton growing districts of India, and capital will be required in order to make those advances to the cultivators of cotton which our manufacturers have been accustomed to make to the flax grower of Prussia, and the bark producer of Turkey; and European agents will be necessary to manage the dealings with the native population, whose confidence must be gained by integrity and kindness; but the ad-

vantages as well to the English manufacturer as to the Indian cultivator will amply repay the men who embark in an adventure big with hope, and promising to combine the private gain of the Company with the advancement of important public interests.

The growth of our Colonial Empire, including in that term our various dependencies, has no parallel in history, whilst in extent it exceeds the territories of Rome in the second century of the Christian era, when, in the language of the historian of the "Decline and Fall," that empire comprehended the fairest part of the earth, and the most civilised portion of mankind. The relations of the various portions of our foreign possessions to the mother country; the spirit which may animate the popular assemblies to whom the Government of our colonies has been of late intrusted, and the line of demarcation which shall separate measures of Colonial Legislation from those of Imperial Government, are matters of anxious solicitude to all who duly regard the responsibilities of extended rule, and who believe that the welfare of subject races should be the end and object of those who govern.

The recent visits of the Prince of Wales to the Canadas, and of Prince Alfred to the Cape of Good Hope, the affectionate reception awarded to both the Princes in those important Colonies, and the favourable impression produced by both in the countries through which they travelled, are auguries of good promise, on which Her Majesty and His Royal Highness our President may well be congratulated. May their visits serve to bind closer the ties which unite us to those interesting provinces.

The journey of the Prince of Wales was not confined to the limits of our own colonies, but embraced a large portion of the United States; and his progress, whether there or in the Canadas, may be described as one continued triumph, enlisting sympathies, removing prejudices, and winning hearts, chiefly by the manifestation of a frank intelligence, a gentle nature, and a considerate spirit.

The Science of Meteorology in its bearing on navigation, is now daily assuming increased practical importance, and it may be interesting to the meeting to be informed that Capt. Maury, a most distinguished member of the United States Navy, is now in this country. The researches of that gentlemen in meteorology, and his investigations into the causes governing the direction and duration of storms, have led to improvements in the science of navigation of the greatest practical utility, and his perseverance and industry in obtaining accurate soundings of the Atlantic plateau, which separates England and America, preparatory to the establishment of the electric telegraph between those countries, deserve the highest praise.

The Council announce that the following papers will be read before the Society previously to Christmas:—

Nov. 28.—"On the Acclimatization of Animals." By Mr. F. T. Buckland, M.A., Student of Christ Church, Oxford, Assistant Surgeon, Second Life Guards.

Dec. 5.—"On Electro-Block Printing, especially as applied to Enlarging or Reducing from any Printing Surface or Original Drawing." By Mr. H. G. Collins.

Dec. 12.—"On Italian Commerce and Industries." By Professor Leone Levi.

Dec. 19.—"On the Straw Plait Trade." By Mr. A. J. Tansley.

The Council invite the assistance of gentlemen willing to contribute papers which they think afford materials for profitable discussion on subjects connected with Arts, Manufactures, and Commerce; and gentlemen who have neither time nor inclination to contribute papers of sufficient length or importance at the evening meetings, would confer substantial benefits on the Society by contributing, in a more condensed form, to the pages of the *Journal* the results of researches, investigations, discoveries, or practical experiments in the applied sciences.

The Council desire to direct attention to the waste products of factories, in the hope that useful information may be collected. By furnishing specimens of such waste products, with particulars of the quantities procurable, it may be found possible to employ them successfully, and to confer on them a commercial value.

The Council regret that no progress has yet been made in the erection of a building for a National Patent Office and Library, notwithstanding the large sums which have been, and are, yearly received by the Commissioners for the grants of patents.

The Society's library of patents, which is bound up to the present time, and consists of 1,233 volumes, is now accessible to our members.

The Council congratulate the Society on numerous improvements made, making, or projected in the metropolis; new streets, bridges, suburban railways, and terminal stations will change the current of traffic both for goods and passengers; subways are commenced, through which gas, water, and sewage will be conducted; subterranean railways are begun, by which traffic will be removed from our streets, and surface tramways projected, by which its passage along the streets may be facilitated; and we hope soon to behold an embankment on the north side of the Thames, which will beautify the town and purify the river. Already the atmosphere has been rendered more wholesome and pure by the partial consumption of smoke; great reforms have been effected in the supply of light and

water, and the telegraph carried over the roofs of our houses has given wings to commerce, and convenient facilities to official and domestic life. These are subjects with which our members have become conversant, either by means of papers read before the Society, or of reports from Committees or the Council.

We may indeed contemplate with some satisfaction the labours of this Society, which has now existed for more than a century. The Royal Academy of Arts has undertaken some of our original functions; the Royal Agricultural Society specially promotes agricultural science; but the Society of Arts is still the only chartered body which seeks to enlist Art as well as the applied sciences in the Promotion of Manufactures and Commerce, and bestows rewards for such productions, inventions, or improvements as tend to the employment of the poor, or the increase of trade, as well as for the application of such products, whether home or foreign, as may afford fresh objects of manufacturing industry, or extend the sphere of British commerce.

In a career so extended the Society has witnessed many vicissitudes, and has shared the fortunes, whether good or evil, of those Arts, Manufactures, and Commerce with which its lot is interwoven. There have been seasons when its light has been obscured and its labours enfeebled, but men appeared upon your Council who proved equal to the exigencies of your condition: and new paths were discovered, novel undertakings projected, and your early vigour restored.

Eleven years ago, encouraged and guided by H.R.H. your President, you originated an International Exhibition of Art and Industry, which was a great success. Eight years ago you formed the Union which now exists with Mechanics' and other Institutions for adult teaching, and 300 Institutions are affiliated to the Society.

That Union of Institutions was followed by the appointment of a Board of Examiners, and the organisation of Local Educational Boards, for the examination of persons connected with the arts and industry of the country, in subjects appropriate to their callings and conditions, a measure which, by encouraging the education of the artisan, will surely contribute to improve manufactures, and thus diffuse and extend commerce. These were undertakings worthily conceived, and not unworthily pursued.

The number of your members has doubled during the last ten, and quadrupled in the last fifteen years, and the Council has this evening had the gratification of notifying the proposal of one hundred new members. This is a larger number than has been proposed on any previous occasion, and affords satisfactory evidence that the Society enjoys the sympathy, confidence, and good opinion of the public.

In my former address from this place, I indicated the important service you would render by introducing amongst us active, ardent, and intelligent men, who are willing to labour for their country's good. To all such men we offer a hearty welcome; and whether as contributors to the weekly *Journal*, or to the papers and discussions of this place, we shall hail them as fellow-labourers for a Society which includes many agencies for promoting the welfare of the community.

But it is not alone on our members that the Council rely for help and co-operation. On our Board of Examiners, and on the Committees who, at the request of the Council, undertake important investigations, devolve duties of a laborious and weighty character, and by their assistance results are achieved which would be otherwise unattainable. May our joint labours tend to overthrow prejudices, secure improvements, diffuse science, and promote social advancement.

It was the remark of a distinguished moralist to one who lamented how small was the influence he had been enabled to exercise in a long life, that no man had lived in vain who had benefited a single human being. We often forsake the daily tasks, humble it may be in character, which are appropriate to our condition, regarding only those primal duties which shine aloft like stars, and forgetting that the charities which soothe and heal and bless are scattered at the feet of man like flowers.

Let us ever be mindful that truth, and not triumph, is the object of our discussions; and that knowledge itself must be pursued with charity, and in a loving spirit. It has been beautifully said that desire of power in excess caused angels to fall; desire of knowledge in excess caused man to fall; but in charity there is no excess,—neither angel nor man can come into danger by it.

The Chairman then presented the Medals awarded by the Council at the close of the last Session, as follows:—

To Mr. R. Thomson, for several novel and ingenious instruments, for use in dental surgery. *The Society's Silver Medal.*

To Mr. Leonard Wray, for his compound of materials as a substitute for gutta percha. *The Society's Silver Medal.*

To Mr. J. C. Morton, for his paper read before the Society, "On the Forces used in Agriculture." *The Society's Medal.*

To Mr. Leonard Wray, for his paper read before the Society, "On the Means of Increasing the Production of Sheep's Wool and Angora Goat's Hair." *The Society's Silver Medal.*

To Mr. George R. Burnell, for his two papers read before the Society, "On Building Stones—the Causes of their Decay and the Means of Preventing it," and "On Building Woods—the Causes of their Decay and the Means of Preventing it." *The Society's Silver Medal.*

To Dr. Daughlish, for his paper read before the Society,

"On a New System of Bread Manufacture." *The Society's Silver Medal.*

To Dr. J. Forbes Watson, F.R.S., for his paper read before the Society, "On the Chief Fibre-Yielding Plants of India." *The Society's Silver Medal.*

Mr. JOHN DILLON said he was quite sure that the address to which they had listened with so much pleasure, would recommend itself to them without any praise from him. Their excellent Chairman began with an obituary of those distinguished persons whom the Society—and, indeed, the country—had lost. This was a subject of special interest to him (Mr. Dillon), because one of the distinguished individuals, whose loss they all regretted, Mr. Locke, he had recently met on public business, a few days before his death, apparently in the full possession of his health, who then bade him good-bye in a tone which made him think—it he thought at all upon the subject—that his (Mr. Locke's) life was better than his own. There was, however, a consolatory subject in the Chairman's address which succeeded these announcements of death—that was the large number of those who were to be added to the list of members of the Society, and who thus evinced their interest in Arts, Manufactures, and Commerce. He was sure he spoke the sense of all who had heard it, when he said that the address of the Chairman on this occasion had been of a most comprehensive kind—that it included almost every subject important to us as men, as Englishmen, and as citizens of the world, and that he merited the warmest thanks of the Society for the labour and industry he had evinced, and for the knowledge he had imparted to the Society in that address. He (Mr. Dillon) begged therefore to propose—

"That the thanks of this meeting and of the Society be given to the Chairman for his able and comprehensive address, embracing as it does almost every subject connected with the prosperity of our own country and the well-being of mankind in general."

Mr. W. H. BODKIN (Assistant Judge) said he had great pleasure in seconding this resolution. He was sure no one could have heard that address without feeling that the Chairman had given his whole heart and soul to the subject. In one part of it he alluded to the revival of the prosperity of the Society by the introduction of a large number of new members, and by increased assiduity on the part of the old members. He believed that amongst all the members present there was hardly any one who had so strong a claim upon their respect and gratitude as the gentleman who now filled the chair. He (Mr. Bodkin) had great pleasure in seconding the vote of thanks to him for an address so full of matter, and of such singular perspicuity of language that it could not fail to carry to the hearts of all, whether members or not, the conviction that he had exerted himself to a remarkable degree to promote the interests of the Society.

The vote of thanks was then put by Mr. Dillon, and unanimously passed.

Sir THOMAS PHILLIPS in acknowledging the compliment, said it was very difficult for him adequately to express the feelings which had been produced in his mind by the very kind expressions which had been employed towards him by his excellent friends Mr. Dillon and Mr. Bodkin, but if anything could cheer a man through the labours that devolved upon him in his passage through life, it was the kind estimation formed of his services by those to whom those services were rendered. He could only say that any little service he could render them would ever be at their disposal, and he begged heartily to express to his friends around him his deep sense of their kind co-operation in the labours of the society. One word more they would permit him to say, and that was, that the proceedings of the Society, in so far as they might be attended with success, owed that success largely to the zeal and ability shown by the officers of the Society. From his association with

them, now for some few years, and having occupied the chair already for more than a year, no one could know better than he did, or could express in stronger terms than he would desire to do, his sense of the services of those gentlemen.

The Secretary called attention to a new Deep-Sea Registering Thermometer, invented by Mr. Henry Johnson, and to Mr. Kerr's new Revolving Pistol; also to two Educational Instruments, invented by Mr. G. R. Smalley.*

The Secretary announced that on Wednesday evening next, the 28th inst., a paper "On the Acclimatization of Animals," by Mr. F. T. Buckland, M.A., Student of Christ Church, Oxford, Assistant-Surgeon, 2nd Life Guards, would be read. On this evening Professor Owen, F.R.S., will preside.

UNIFORM MUSICAL PITCH.

The subjoined declaration is in the course of signature, and the following names have been already subscribed to it:—

The Council of the Society of Arts, desirous of remedying the inconvenience resulting to musical practice from the prevalent uncertainty of Musical Pitch, called together a meeting of musicians, musical amateurs, and musical instrument makers, in the month of June, 1859.

At this meeting, after protracted discussion, a unanimous resolution was passed, declaring that the adoption of one uniform Musical Pitch was desirable; and with a view to determine what this pitch should be, a Committee was appointed to make investigation and to report. This Committee, after careful consideration, made their report, showing the results of their investigations, and the same was laid before a general meeting, held at the rooms of the Society, on the 5th of June, 1860; and the meeting, after a full discussion—

"RESOLVED:—That the Pitch of 528 vibrations for C be recommended for universal adoption in this country."

We, the undersigned, musicians, musical amateurs, and manufacturers of musical instruments, desire to express our full concurrence in the above resolution, and our intention, individually, to use and promote the adoption of this Pitch, so far as lies in our power:—

Giovanni Belletti, basso cantante.

William Sterndale Bennett, Mus. Prof. Cantab.

Bishop and Co., organ builders.

Henry G. Blagrove, Professor of the violin, leader, &c.

G. Bruzaud (Erard and Co.'s), pianoforte and harp maker.

Rev. W. W. Cazalet, A.M.

J. Balsir Chatterton, harpist to Her Majesty.

Thomas A. Cock, lecturer in mathematics, King's College, London.

Collard and Collard, pianoforte manufacturers.

A. De Morgan, Professor in University College, London.

Rev. G. T. Driffild, amateur, rector of Bow, Middlesex.

H. Sutherland Edwards.

George J. Elvey, Mus. Doc., Oxon; organist of St. George's, Windsor.

Lord Gerald Fitzgerald, amateur violoncellist.

Gray and Davison, organ builders.

T. M. Goodeve, M.A., Professor of Mechanics at the R.M. Academy, Woolwich.

John Goss, organist of St. Paul's Cathedral, and composer to H.M.'s Chapel Royal.

J. Henry Griesbach, professor of the pianoforte and composition.

Charles Lewis Gruneisen, F.R.G.S., musical amateur.

* For Description, see pp. 16 and 17.

Harper, Thomas, professor at the Royal Academy of Music; principal trumpet and cornet, Royal Italian Opera, &c.

Rev. Thomas Helmore, late minor canon in Lichfield Cathedral, precentor of the National Society's Training College, Chelsea, and master of the Children of her Majesty's Chapels Royal.

William Hill and Son, organ manufacturers.

Edward John Hopkins, organist of the Temple Church, &c., &c.

James Howell, principal double bass, &c., R. Academy of Music.

John Hullah, professor of music.

Joseph Kirkman and Son, pianoforte makers.

John Köhler, musical instrument manufacturer (military).

Henry Leslie, conductor.

Henry Charles Lunn, professor at the Royal Academy of Music.

G. A. Macfarren, professor of Composition and Harmony to the Royal Academy of Music.

James Muir, pianoforte tuner.

Alfred Nicholson, principal oboe, Philharmonic Society.

Rev. Sir Frederick A. Gore Ouseley, Bart., precentor of Hereford, professor of music at the University of Oxford, M.A., and Mus. Doc.

William Pole, Mus. Bac. Oxon, Prof. University College, London.

Cipriani Potter, professor and late principal of the Royal Academy of Music.

J. Sims Reeves, vocalist.

Rev. G. Cooke Rowden, D.C.L., precentor of Chichester, and chaplain to the Royal Society of Musicians.

Sir George T. Smart, organist and composer to her Majesty's Chapel Royal.

Edwd. Taylor, professor of music in Gresham College.

James Waddell, master of the band, 1st Life Guards.

S. W. Waley, amateur.

Joseph William Walker, organ builder.

Rev. W. Whewell, D.D., master of Trinity College, Cambridge.

Rev. Professor Willis, Cambridge.

Henry Wylde, Mus. Doc., professor of harmony in the Royal Academy of Music, director and conductor of the New Philharmonic Concerts.

Tuning-forks, in accordance with the standard adopted by the Society's Committee, are manufactured and sold by Messrs. Cramer and Co., Regent-street.

DEEP-SEA THERMOMETER.

The great pressure of sea water upon thermometers of the ordinary construction in deep-sea soundings, rendering their indications untrustworthy, has led to a variety of attempts to overcome this difficulty, and Mr. Henry Johnson, whose deep-sea pressure gauge has been exhibited before the Society, has contrived a metallic thermometer,* for the purpose of getting reliable results of temperatures at great depths. The indication of temperature by this instrument is not liable to disturbance by the pressure of water; the metals by which it is composed—brass and steel—having much greater density or specific gravity than the surrounding water, even at very great depths.† The construction of the instrument, of which a

* The instrument has been tested and approved by Mr. James Glaisher, F.R.S., whose experiments upon the temperature of water upon different depths, made some years since, suggested the adoption of a metallic thermometer.

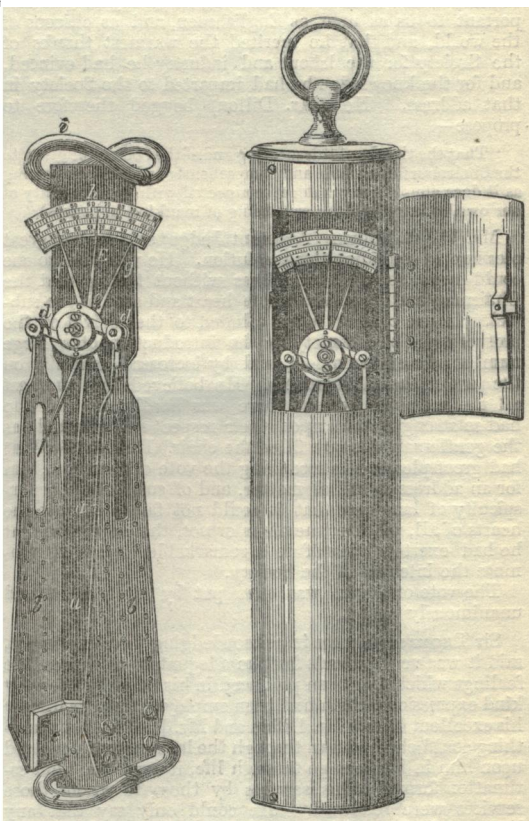
† Water compressed by Mr. Perkins, under a pressure of 1,120 atmospheres (equal to the pressure of about 5,600 fathoms in round numbers), suffered a diminution in bulk of six one-hundredth parts, so that the 94 parts into which the 100 parts were compressed would require a density or specific gravity rather above 1.06.

The specific gravity of brass is 8.39

The specific gravity of steel is 7.81

drawing is annexed, is very simple. Upon one end of a narrow plate of metal, rather exceeding a foot in length, are fixed three scales of temperature, ranging from 25° to 100° Fahrenheit. Upon one of these scales the present temperature is indicated by the point of a needle, which turns upon a pivot in its centre, and on the other scales register indexes are pushed by the needle to the maximum and minimum temperatures, where they are retained by stiff friction. To the needle are attached, at equal distances from the centre, by connecting pieces, the free ends of two compensation bars, composed of brass and steel rivetted together, the other ends of the bars being fixed to the above-mentioned plate of metal.

The needle is governed by the lateral motion of these bars consequent upon variation of temperature. Two bars attached to the needle are used in order to prevent disturbance of the indication by lateral concussion. For a stationary thermometer the motive power of a small compensation bar would be sufficient. Although contrived for a special purpose, this simple instrument may be used in all experiments upon temperature, and in surveying expeditions it may be serviceable in giving notice of variation of depth of water, and the necessity of taking soundings. A diminution of temperature of water has been observed by scientific voyagers to accompany diminution of depth, as on approaching hidden rocks or shoals, or nearing land or icebergs.



a—Brass plate or frame.

bb—Compensation bars.

c—Block of brass connecting bars with frame.

d—Connecting pieces, connecting bars bb with needle E at points equidistant from centre.

E—Moving needle, with a pin at e for adjusting the register hands.

f—Register hand for cold.

g—Register hand for warmth.

h—Scales of temperature.

i—Caoutchouc rings suspending thermometer in its brass case.

NEW REVOLVING PISTOL.

The following are the points to which its inventor, Mr. Kerr, calls special attention:—

1st. By the introduction of the ordinary back-action Gun-lock, which, with the addition of one limb only, revolves the cylinder, this revolver is rendered as simple as any single barrel pistol.

The lock can be cleaned by any one conversant with fire-arms, and it can be repaired by any Gun-maker or Armourer, thereby obviating the objections which have been hitherto raised to the general use of Revolvers, from the complicated nature of their action.

2nd. The lock being fitted into the stock in the usual method is completely closed up; no wet or dirt can get inside it; the exploded caps cannot be blown off the nipples into the action, rendering the pistol useless for the time, and the limbs of the lock are not exposed to injury by the gas from the discharge (as in other revolvers), which soon rusts and spoils them.

3rd. A raised boss or shield protects the nipples, and prevents the chance of accident by anything striking the caps, in suddenly withdrawing it from the holster, belt, or otherwise.

4th. The body and barrel being separate, enables the former to be case-hardened, which adds greatly to its strength.

5th. A very simple and powerful lever is used for the ramrod; it is placed under the barrel, and has a spring catch, which prevents its being shaken out by the recoil in shooting, and the plunger working in a hole drilled true with the axis of the bore of the cylinder, insures the ball being correctly inserted.

6th. Simplicity and strength have been studied in the general construction of the pistol.

EDUCATIONAL APPARATUS.

The following is a description of two illustrative models invented by G. R. Smalley, B.A., F.R.A.S., Head Mathematical Master in King's College School, London; Lecturer on Natural Philosophy at St. Mary's Hospital:—

THE TRIGONOMETRICAL DEMONSTRATOR.—This instrument consists of a graduated circle, furnished with a revolving radius, a fixed horizontal bar, and a vertical bar, which, being suspended at its centre from the extremity of the radius, always retains a vertical position. The horizontal and vertical bars are graduated in opposite directions from their centres—one-half having positive, the other half negative readings. For angles less than 180° , the perpendicular on the base is formed by the lower and positive half of the vertical bar; for angles greater than 180° , by the upper and negative half. The length of the perpendicular is always estimated from the upper edge of the horizontal bar; that of the base to the vertical line through the centre of the perpendicular. The object of the instrument is to elucidate the meaning of the Trigonometrical Terms and Ratios; Supplemental and Negative Angles; to obtain, with sufficient accuracy for illustration, the numerical values of Trigonometrical Ratios; and to exhibit, mechanically, their changes in sign and magnitude as the angle increases from 0° to 360° . For the convenience of tutors who may adopt the original *Line Definitions*, two additional bars are provided, to show the tangent and secant of angles less than 75° ; one of them is to be fixed to the extremity of the radius at right angles to it, after removing the vertical bar. The other forms a prolongation of the base.

PARALLELOGRAM OF FORCES ILLUSTRATOR.—This apparatus, which illustrates the fundamental principle of Mechanics, consists of a Parallelogram with moveable sides, and diagonal, which can be so adjusted that two of the adjacent sides may have any relative magnitude, and be inclined to each other at any proposed angle. One extremity of the diagonal is at the centre of a graduated

circle, by which the directions of the sides and diagonal of the Parallelogram are determined. Three strings, meeting in a point at the centre of the instrument, pass over pulleys, two of which are moveable, so that the directions of the strings may be made to coincide with the sides and diagonal of the Parallelogram. From the extremities of these strings weights may be suspended; and the combined effect of two of these in the directions of the sides of the Parallelogram, is shown by a mechanical contrivance to be the same as that produced by their resultant in the direction of the diagonal.

Proceedings of Institutions.

GOSPORT AND ALVERSTOKE LITERARY AND SCIENTIFIC INSTITUTION.—Mr. H. D. P. Cunningham has resigned the Presidency of this Institution, his successor being Captain Richard Purvis, R.N.

MEETINGS FOR THE ENSUING WEEK.

- MON. ...Medical, 8 $\frac{1}{2}$.
Royal Geographical Society, 8 $\frac{1}{2}$. "Some Remarks on the Physical Geography of the Ocean in connection with the Antarctic Regions." By Capt. M. F. Maury, of the United States.
TUES. ...Civil Engineers, 8. Mr. Wm. Henry Preece, "On the Maintenance and Durability of Submarine Cables in Shallow Waters."
Medical and Chirurg, 8 $\frac{1}{2}$.
WED. ...Society of Arts, 8. Mr. F. T. Buckland, "On the Acclimatization of Animals."

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, November 16th, 1860.]

Dated 21st September, 1860.

2304. J. Fisher, Carrington, Nottinghamshire—Imp. in machinery or apparatus for treating clothes and other articles whilst in a wet condition, for the purpose of drying or partially drying the same.

Dated 26th September, 1860.

2342. L. Buchholz, Manchester—Imp. in carbonising sawdust, and other finely-divided vegetable substances, and in obtaining certain useful products by such carbonization, and in apparatus connected therewith.

Dated 13th October, 1860.

2498. H. W. Harding, 108, Regent-street.—An improved combined sandwich-case and drinking flask.

Dated 18th October, 1860.

2538. T. J. Marshall, Bishopsgate-street Without—Imp. in the manufacture of paper, and in machinery or apparatus for effecting the same.

Dated 19th October, 1860.

2552. J. Thompson, E. G. Fitton, and F. A. Fitton, Manchester—Imp. in machinery used in boring, turning, and cutting metals and other substances, part of which is applicable for driving other machinery.
2554. J. Marden, 75, Turnmill-street, Clerkenwell—An improved method of bleaching and whitening fibres and fabrics of various kinds.
2558. J. Burch, Crag, near Macclesfield, Cheshire—Imp. in the construction of boilers for generating steam and other heating purposes.

Dated 20th October, 1860.

2555. E. W. Hughes, 22, Parliament street—Imp. in the construction of tents particularly adapted to military purposes, part of which invention is equally applicable to temporary buildings generally.

Dated 22nd October, 1860.

2568. J. Smith, Manchester, and J. Holt, Farnworth, near Bolton-le-Moors, Lancaster—Imp. in machinery for preparing and spinning cotton, and other fibrous materials.

2570. C. G. Russell, Manchester—An improved method of and apparatus for, facilitating the operation of certain kinds of printing from engraved plates, cylinders, lithographic stones, letter-press blocks, and other like surfaces.

Dated 23rd October, 1860.

2580. Edwin Lewis, Birmingham—An improved apparatus for washing, cleaning, or separating particles of metal from other refuse matter.

Dated 26th October, 1860.

2608. F. S. Barff, Dublin—Imp. in the production of artificial stone, which improvements are also applicable to the preservation of stone, bricks, tiles, and other analogous substances or materials.
2610. W. Sharpe, Swadlincote, Derbyshire—Imp. in latches and locks.
2612. T. Cobley, Meerholz, Germany—Imp. in the manufacture of white lead (meaning carbonates of lead.)
2616. R. A. Brooman, 166, Fleet-street—Imp. in uniting water, gas, and other pipes and tubes. (A com.)
2618. W. Syrett, Bury St. Edmunds, Suffolk—Imp. in steam engines.

Dated 27th October, 1860.

2620. C. Hathaway, Liverpool—Imp. in the construction of street railways, and in the wheels to run thereon.
2622. H. Lawson, Holcomb-brook, near Bury, Lancashire—Imp. in machinery for putting cop tubes on to the spindles of mules for spinning, and in apparatus for supplying the cop tubes to the said machinery.
2626. T. Smedley, Holywell, Flint—Imp. in the manufacture of metal rollers and cylinders used for calico printing, and other purposes.
2628. W. Hunt, Tipton, Staffordshire—Imp. in obtaining sulphur, or certain sulphur compounds from certain other sulphur compounds, and in obtaining carbonic acid.
2630. E. K. Dwyer, Pimlico—Imp. in machinery for doubling, creasing, and folding cloth.
2634. W. E. Newton, 63, Chancery-lane—Improved apparatus for milking cows. (A com.)

Dated 29th October, 1860.

2626. E. Blackledge, Bolton-le-Moors, Lancashire—Imp. in the preparation of materials for sizing, dressing, or finishing warps, yarns, textile fabrics or paper.
2638. T. Wilson, Birmingham—Imp. in moveable spanners or screw wrenches.
2642. E. Harrison, W. Bradbury, J. Buckley, and D. Garside, Oldham—A certain compound, or certain compounds, to be used as a substitute for gunpowder.

Dated 30th October, 1860.

2650. I. Dreyfus, Paris—Imp. in rolling iron, and in machinery employed therein.
2652. J. Beck, 10, Isabella-street, Broadwall, Christchurch, Surrey—Imp. in stop valves for water, steam, and other fluids.

[Dated 31st October, 1860.]

2662. L. Martin, 9, Tenison-street, York-road, Lambeth, and O. Penfold, 4, Blackmoor-street, Drury-lane—Imp. in the manufacture of candles.
2664. G. Davies, 1, Serle-street, Lincoln's-inn—Imp. in boxes for railway carriage axles and other shafts. (A com.)
2666. J. Anderson, Belfast, Ireland—Imp. in the manufacture of felt, and in the mode of applying the same to railways and to other uses.

Dated 1st November, 1860.

2667. W. Reynolds, Prior-cottage, and G. A. Samson, Duck-lane, Edmonton, Middlesex—Imp. in the manufacture of boots and shoes.
2668. D. Joy, Manchester—Imp. in the valves of steam hammers, which are also applicable to other purposes.
2669. F. Johnson, 12, North street, Westminster—Imp. in fixing screw piles and moorings.
2671. E. F. Prentiss, Philadelphia, U.S.—Imp. in the combination of chemical materials for scouring, bleaching, and dyeing wool, cotton, silk, and other materials.
2672. J. Underhill, Loveday-street, Birmingham—Imp. in window sash and casement fasteners.
2673. W. Edwards, Manchester—A self-acting apparatus for regulating and adjusting the pressure of gas and other fluids.
2674. W. E. Newton, 65, Chancery-lane—An improved mode of preparing or insulating electric conductors for telegraphic purposes either on land or under water. (A com.)
2675. W. Bryant, 5, Lipson-terrace, Plymouth—Imp. in treating oily and fatty substances.
2676. C. Harratt, Horney-lane, Highgate—Imp. in machinery used in giving motion to a shaft or axis used in propelling vessels, ploughs, and machinery.
2677. J. Bettys, 15, Upper Gloucester-street, Middlesex—Imp. in carriages and carriage springs.
2678. R. Murray, 29, Sandhill, Newcastle upon-Tyne—Imp. in the manufacture of telegraphic cables or ropes.

Dated 2nd November, 1860.

2680. H. Davidson, Spray's-buildings, and J. McDonald Ellercamp, Powis-street, Woolwich—Improved apparatus for lowering and disengaging ships' boats from their tackles, parts of said apparatus being applicable to the lowering and disengaging of other heavy bodies or merchandise.
2684. J. Leonard, and B. Lorentz, Skinner's-place, Size-lane—Imp. in the manufacture of ornamented woven fabrics when chenille is employed.
2686. M. Clark and A. Clark, Glasgow—Imp. in packages or holders for containing biscuits.
2688. W. T. Denham, 18, Wilmington-square, Clerkenwell—Imp. in producing devices on velvet, paper, and other fabrics or materials.

Dated 6th November, 1860.

2713. M. R. Leverson, 12, St. Helen's-place—Imp. in fire-arms. (A com.)
2715. E. P. H. Vaughan, 15, Southampton-buildings, Chancery-lane—An improved plug for boats.
2717. W. Hewitt, Birmingham—An imp. or imp. in whip holders or whip sockets.
2719. W. Jones, 246, High Holborn—Imp. in machines or presses, and apparatus attached thereto, for stamping or embossing paper or other substances.
2721. W. Birks, sen., and W. Birks, jun., Nottingham—Imp. in bobbin, net, or twist lace machinery.
2723. J. R. Gyton, Grimsthorp, Lincolnshire—Imp. in paddle wheels.
2725. C. Asprey, New Bond-street—An imp. in locks for bags, dressing cases, and other articles.
2727. R. A. Brooman, 166, Fleet-street—An imp. in the manufacture of forks and spoons. (A com.)
2729. T. W. Smith, Lower-road, Islington—An improved process for obtaining pigments.
2731. T. Cobley, Meerholz, Germany—Imp. in the method of treating poor ores of copper.

INVENTIONS WITH COMPLETE SPECIFICATION FILED.

2759. C. Stevens, 18, Welbeck-street, Cavendish-square—An improved machine for raising water. (A com.) 9th November, 1860.
2771. H. W. West, Attleborough, U.S.—A machine for pressing and shaping straw hats or various other articles of like character. 12th November, 1860.

PATENTS SEALED.

[From Gazette, November 16th, 1860.]

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| November 14th. | 1270. T. Cope. |
| 1228. H. N. Nis en. | 1272. M. Cavanagh. |
| 1240. C. Binks & J. Macqueen. | 1274. G. Bartholomew. |
| 1243. T. Blakeley. | 1280. D. Mulkay. |
| 1245. T. W. Teulon. | 1292. E. De Block-Stevens. |
| 1246. W. Barker. | 1374. G. Fletcher. |
| 1247. J. Craig. | 1455. M. Henry. |
| 1253. G. Moulton. | 2119. J. Fisher and J. Fisher. |
| 1256. S. Hood. | |

[From Gazette, November 20th, 1860.]

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|--------------------------------|-------------------------|
| November 20th. | 1319. C. Berck. |
| 1260. W. T. Shaw. | 2343. J. A. Manning. |
| 1261. J. Bottomley. | 1409. J. Wright. |
| 1271. W. H. Burnett. | 1481. J. Braby. |
| 1278. T. Heppleston. | 1845. J. Rahill. |
| 1287. R. C. Clapham & R. Call. | 2233. R. Mushet. |
| 1291. F. W. Prince. | 2269. W. E. Newton. |
| 1301. E. T. Hughes. | 2333. T. S. Truss. |
| 1303. G. Elliot. | 2341. W. Macnab. |
| 1305. R. A. Brooman. | 2413. T. M. Richardson. |
| 1307. J. Dale. | |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, November 13th, 1860.]

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| November 12th. | November 14th. |
| 2858. W. J. Gifford. | 2864. G. P. Wheeler. |
| November 13th. | 2892. A. F. Germann, F. G. Germann, and J. Germann. |
| 2866. J. Macintosh. | |
| 2925. G. J. Bensen. | |

[From Gazette, November 20th, 1860.]

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| November 17th. | November 14th. |
| 2893. A. A. Salomon-Cohen. | 2909. J. Clarke. |
| | 2927. J. M. A. E. Fabart. |

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[From Gazette, November 16th, 1860.]

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|----------------------|-----------------|
| November 12th, 1860. | 2639. W. Smith. |
| 2634. H. Willis. | |

[From Gazette, November 20th, 1860.]

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| November 15th. |
| 2684. J. H. Brown. |